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Computer Program Developed for Flowsheet Calculations and Process Data Reduction

A generalized computer program, PACER-65, has been developed and utilized for flowsheet calculations and process data reduction. In broad terms, PACER-65 is an executive program for flowsheet calculations. Each unit, vessel, meter, and processing operation in the overall flowsheet is represented by a separate subroutine, which is completely removable and interchangeable. The subroutines generally contain material- and/or energy-balance equations, calibration data, conversion factors, etc. The PACER-65 executive program plans the sequence of calculations and calls the various subroutines in the order required to complete an overall flowsheet calculation. The effects of changes in the process flowsheet or variation of processing conditions are readily evaluated.

PACER-65 offers these advantages:

1. The process designer is relieved of most of the tedious aspects of flowsheet studies, so he has more time to generate new ideas for flowsheet improvement. Variation of process conditions or processes rates can be completely investigated by simple changes in data, and detailed knowledge of the computer program is not required.
2. The PACER-65 is constructed similar to the actual process flowsheet. Thus, each process is represented by a separate equipment subroutine, and the PACER-65 program is provided with a simple numerical code telling how the process equipment vessels are connected in the flowsheet.
3. The executive portion of PACER-65 is almost fully automatic.

Although the PACER-65 method is primarily designed for flowsheet calculations, it can be easily adapted to process-data reduction. Data reduction can be defined as conversion of raw process data, such as orifice pressure drop or millivolt readings, to quantities such as flowrate, temperature, and reaction efficiencies.

In this application, the subroutines incorporate calibration data for flow-metering instruments, etc., as well as equations required to perform the various calculations. This adaptation of PACER-65 for process-data reduction has provided a systematic method for the calculation of operating conditions from the raw experimental data recorded during a process run.

Notes:

1. Details of the program and examples of its application to fluid-bed volatility processes are presented in "A Generalized Computer Program for Flowsheet Calculation and Process Data Reduction," by L. B. Koppel, P. G. Alfredson, L. J. Anastasia, I. E. Knudsen, and G. J. Vogel of Argonne National Laboratory, Argonne, Illinois, ANL-7197, April 1966. The report is available from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151 for \$3.00 (microfiche \$0.65).
2. This information may be of interest to any chemical engineering firm.
3. Details of the computer program are available.

(continued overleaf)

4. Inquiries concerning this innovation may be directed to:

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Reference: B69-10023

Source: L. B. Koppel, P. G. Alfredson,
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(ARG-10134)

Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

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